

Application No.: 10/533423
 Docket No.: DC8507U3PCT1
 Response to Non-final Office Action of 06 Sep 2007

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Amendments to Claims

1. (Currently amended) An electrochemical cell component comprising:
 - (a) ~~a~~ an electroconductive gas diffusion layer comprising a porous body, and body, said gas diffusion layer having opposite first and second surface, said first surface of said gas diffusion layer abutting an electroconductive separator plate, said second surface of said gas diffusion layer abutting an electrode,
 - (b) an said electroconductive separator plate comprising at least one landing surface formed on a surface of the electroconductive separator plate, and the electroconductive separator plate and landing surface comprising a thermoplastic polymer and conductive filler,

wherein the first surface of the gas diffusion layer is joined to the separator plate by localized impregnation of impregnating some of the thermoplastic polymer on the landing surface within a portion pores of the porous body in a manner that the electrical contact between the conductive filler and the gas diffusion layer is maintained.
2. (Currently amended) The electrochemical cell component of claim 1, wherein the surface of the electroconductive separator plate comprises landing surfaces separated by open flow field channels, and the gas diffusion layer is locally joined to the electroconductive separator plate on the landing surfaces by using a welding localized heating technique selected from the group consisting of: resistance welding, vibrational welding, ultrasonic welding, and laser welding, heat lamination, and hot bending techniques.
3. (Currently amended) The electrochemical cell component of claim 2, wherein the welding localized heating technique is resistance welding.
4. (Currently amended) The electrochemical cell component of claim 1, wherein the polymer is a thermoplastic polymer is selected from the group consisting of melt processible polymers, partially fluorinated polymers, thermoplastic elastomers, liquid

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crystalline polymers, polyolefins, polyamides, aromatic condensation polymers, and mixtures thereof.

Claims 5-11 (Cancelled)

12. (Currently amended) The electrochemical cell component of ~~claim 4~~ claim 1, wherein the thermoplastic polymer is a blend of ~~about 1 wt% to about 30 wt%~~ of maleic anhydride modified ~~polymer with the thermoplastic polymer, polymer,~~ partially fluorinated polymers and liquid crystalline polymer, and wherein the maleic anhydride modified polymer comprises about 1 wt% to about 30 wt% of the thermoplastic polymer or mixtures thereof.

13. (Currently amended) The electrochemical cell component of ~~claim 4~~ claim 1, wherein the thermoplastic polymer is a blend of ~~about 5 wt% to about 25 wt%~~ of maleic anhydride modified ~~polymer with the thermoplastic polymer, polymer,~~ partially fluorinated polymers and liquid crystalline polymer, and wherein the maleic anhydride modified polymer comprises about 5 wt% to about 25 wt% of the thermoplastic polymer or mixtures thereof.

14. (Previously presented) The electrochemical cell component of claim 1, wherein the conductive filler is graphite fiber and graphite powder.

15. (Currently amended) The electrochemical cell component of claim 1, further comprising a thermoplastic polymer rich layer on the top surface of the landing surface.

16. (Currently amended) The electrochemical cell component of claim 15, wherein the thermoplastic polymer rich layer comprises between about 25 wt% and about 100 wt% polymer.

17. (Currently amended) The electrochemical cell component of claim 16, wherein the thermoplastic polymer rich layer comprises between about 50 wt% and about 100 wt% polymer.

18. (Previously presented) The electrochemical cell component of claim 1, wherein the electrochemical cell component has a resistivity less than a resistivity of a system comprising a gas diffusion layer that is not welded to a plate.

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19. (Currently amended) The electrochemical cell component of claim 1, wherein the ~~surface of the separator plate comprises open flow field channels and~~ the gas diffusion layer does not sink into the open flow field channels of the electroconductive separator plate.

20. (Previously presented) An electrochemical cell comprising the cell component of claim 1.

21. (Previously presented) An electrochemical cell stack comprising a plurality of the electrochemical cells of claim 20.

22. (New) An electrochemical cell component comprising:

a gas diffusion layer comprising a porous body, said gas diffusion layer having opposite first and second surface, said first surface of said gas diffusion layer abutting an electroconductive separator plate, said second surface of said gas diffusion layer abutting an electrode,

said electroconductive separator plate comprising at least one landing surface formed on a surface of the electroconductive separator plate, and the electroconductive separator plate and landing surface comprising a thermoplastic polymer and conductive filler;

wherein the first surface of the gas diffusion layer is joined to the electroconductive separator plate by localized impregnation of some of the thermoplastic polymer on the landing surface within pores of the porous body in a manner that the electrical contact between the conductive filler and the gas diffusion layer is maintained; and

wherein the thermoplastic polymer is a blend of maleic anhydride modified polymer, partially fluorinated polymers and liquid crystalline polymer, and wherein the maleic anhydride modified polymer comprises about 1 wt% to about 30 wt% of the thermoplastic polymer.

23 (New) The electrochemical cell component of claim 22, wherein the gas diffusion layer is joined to the electroconductive separator plate by using a localized heating technique selected from the group consisting of: resistance welding, vibrational welding, ultrasonic welding, and laser welding.

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24 (New) The electrochemical cell component of claim 1, wherein the surface of the electroconductive separator plate comprises landing surfaces separated by open flow field channels, and the gas diffusion layer is locally joined to the electroconductive separator plate on the landing surfaces where the thermoplastic polymer on the landing surfaces locally impregnates pores of the gas diffusion layer, and wherein the gas diffusion layer does not sink into the open flow field channels of the electroconductive separator plate.